In 1919, Lt. Col. Eisenhower traveled by motor vehicle convoy from Maryland to California, a trip that took an exhausting 62 days because of poor roads. In 1956, due to mounting pressure, Congress finally approved construction of a 41,000-mile Interstate System of highways. It transformed America's system of public and commercial transportation; then-President Eisenhower stated why: *"Our communication and transportation systems are dynamic elements in the very name we bear: United States. Without them, we would be a mere alliance of many separate parts."*

Today, it is the digital communication system that is the dynamic unifier, and that is what the Department of the Navy seeks to build across the Navy and Marine Corps. It, too, promises transformation: a more efficient and effective DON. And, how we build it is a lot like how America built the Eisenhower Interstate System of highways nearly 50 years ago.

Building a System

America built the Interstate System of highways for many of the same reasons we seek to fix the Navy's digital communications. America's roads were once described as *"wholly unclassable, almost impassable and scarcely jackassable."* They varied in conditions, standards and lagged behind automotive advances. The result was *"loss of time due to congestion,"* with an appalling problem of *"death and danger,"* stated President Eisenhower. Compare that to the Navy's 1,000 incompatible and antiquated shore networks that not only inhibited information flow, but were also vulnerable to attack.

But, the interstate endeavor wasn't about just laying roads; it was about *building a system*. It required an incredible balancing act by the U.S. Bureau of Public Roads, which had to focus on the overall system, regulating standards and ensuring efficiency. The Bureau had to consider the needs of 3,000 counties and 48 states, and match those to road building capabilities. Often, the precise locations of highways, underpasses and overpasses had to be negotiated. Especially contentious was access-control, (where vehicles enter and exit the highway), a radical concept for its time. Not all were pleased with the improvements, either. Some called it the *"great highway bungle"* and a *"multibillion dollar rathole."* Sound familiar?

Today, the Navy isn't just laying an information highway, it is building an information system, or what is known as an "enterprise system." It is consolidating all its networks into the Navy Marine Corps Intranet — its information highway. To operate on it, we are developing such enterprise-wide applications as the New Order Writing System; Navy Recruiting and Accessions Management System; Navy Standard Integrated Personnel System and eventually the Defense Integrated Human Resources System, which the Navy is leading in development for all of DoD.

But, these are not enough. The promise of the enterprise system is greater efficiency and effectiveness. That's what the corporate world achieved by implementing them and that is what we seek for the DON as well. We want to be able to rapidly correlate data, collaborate on experiences, establish a common picture, and *act corporately*. The question is what else is needed to do that — the other applications, servers and services — not just across the Naval service but in each one the Navy's 24 functional areas? Moreover, how can we determine and incorporate them in a cost effective manner?

Building a Partnership

No one organization has all the answers. How we get them, though, is a lot like how the Interstate System of highways was built. It was accomplished through a *"highway partnership,"* a collection of local, state and federal agencies, the Bureau of Public Roads, and industry. *"The highway partnership ...is a model that should be applied to other programs,"* stated Thomas H. MacDonald, Bureau of Public Roads Chief from 1919 to 1953. And, he's right. Building a Naval information enterprise system requires a partnership between users, the Navy's IT acquisition community and industry.

Ultimately, users must decide the requirements. That was the case with the asphalt highway system. *"The highway program must rest upon the essential premise that we are dealing with the lives of people and in the end they will make the final choices,"* stated MacDonald. This is just as true with a digital highway system. Referring to collaboration on IT systems at Electric Boat, President John Welch stated, *"The people have to make all these great tools sing, so they've got to be part of the process."*

Determining IT requirements, though, is often new territory for users. The tendency is to focus on means — technologies and systems — rather than on the end product and what needs to be accomplished. *"Many organizations fail to specify any organizational objectives at all when implementing an enterprise system,"* stated Thomas H. Davenport, professor of Information Management at Boston University. As a result, they either adapt the system to belatedly recognized needs, or abandon it altogether. Whatever the case, it's costly.

Determining IT requirements, therefore, depends on collaboration, and that's where Navy IT acquisition comes in. Essentially, it helps answer the fundamental question, *"Where are you and where do you think you want to go, so we can better lay out the road?"* While some might see such collaboration as slowing acquisition, it is

much better to have a roadmap as opposed to stopping and asking for instructions along the way.

Industry has a key role in this partnership. In building the Interstate System, the Bureau of Public Roads worked with industry regarding the types and technical features of vehicles that would operate on these highways. For example, the automobile's speed and turning radius made previous road patterns obsolete, requiring new ones. The Bureau also had to know where industry was going, which was especially the case with the growing volume of heavy trucks. Building the Interstate System meant knowing every aspect of industry's transport plans — both present and future.

Today, industry is the premiere expert regarding what operates on information enterprise systems. It has already gone where government has yet to go in terms of enterprise systems. We've got to find out from industry how they have done this.

The problem, however, is that industry sometimes doesn't know how to talk to Navy users about their unique requirements. Again, here's where Navy IT acquisition comes in. It must translate between industry and users, enabling industry to provide a realm of possibilities. It may be necessary for us to iterate back and forth until we say, *"Hey, we have a solution."* However, the bottom line is that we form solutions around industry products.

Moreover, Navy IT acquisition must remain abreast of industry advances and educate users. We are much more in a *"technology-/industry-push"* model for the basics of an enterprise rather than *"user-pull."* So, in that regard, it's even more important that we see where industry is going. However, we still need to address and accommodate user pull in those areas where our innovative Sailors and Marines are pushing the bounds of IT capability to address military unique and leading-edge business needs.

The Middlemen

At the center of this partnership is one organization, the Program Executive Office for Information Technology (PEO-IT), that takes responsibility for acquiring the whole, and conducting a massive coordination and execution process. The need for this was recognized with the Interstate System. As one industry expert stated, *"Without such thoughtful coordination of the highway program ... the proposed $100 billion of highway spending will buy as much chaos as concrete."*

An enterprise system requires the same thoughtful coordination; otherwise, the consequences can be chaotic, as well. One natural resources company that decentralized implementation of an enterprise system failed to achieve interoperability across its enterprise. An electronics firm that took a similar approach implemented different versions of the same system in some areas of the company, but not all. Here's another example of uncoordinated IT acquisition — a Navy with over 100,000 applications, many of which are redundant and unnecessary.

The PEO-IT must be at the center of this partnership. It not only translates between industry and users, it facilitates the big ticket items and helps incorporate them into the enterprise system. Using a new application is not just a matter of sticking it on the system. It impacts servers, as well as, other components. It also has organizational and cultural implications. For example, education and skills development can be 25 to 50 percent of an IT project's cost. Someone has to consider the big picture and that someone is the PEO-IT.

The Process

In 1994, the American Society of Civil Engineers designated the Interstate System of highways as one of the *"Seven Wonders of the United States."* It was testimony not only to its engineering, but also the cooperative partnership and massive coordination that made it possible. That's what is needed now to build a Naval enterprise system. It requires users to indicate where they need to go, industry to offer a realm of possibilities, and the PEO-IT to facilitate a solution and lay out a roadmap. It's a process that can lead to the next wonder.

Mr. Ehrler is the Department of the Navy Program Executive Officer for Information Technology (PEO-IT).

NKO EXPANDS ACCESSIBILITY

By Lt. j.g. Amanda Raymond, USN

New and Improved. It is a phrase that is heard everyday. Now, Navy Knowledge Online (NKO) can say it too. NKO, Sailors' one stop shop for career management, is now available on SIPRNET. Since its inception, over 90,000 users have registered in NKO, utilizing the site over half a million times, downloading over 330,000 documents. In June, the classified version of NKO was activated and administrators began migrating content to this site. Now communities that primarily use the SIPRNET, such as intelligence, cryptology and submarine, can connect with the Navy's Revolution in Training and take advantage of all the great tools that NKO offers.

"Obviously being able to access career information in a secure environment is essential to several ratings and communities," said Lt. Eric Morris, Naval Personnel Development Command Knowledge Management Program Manager. *"Likewise, this link is vital to our being able to take training to Sailors, instead of bringing the Sailors to the training."*

NKO's expansion doesn't stop with the classified side of the Navy. A new *lightweight* version of NKO is now being developed for ships. A pilot program started summer 2003 in conjunction with Naval Sea System Command's Distance Support Testing and operates without requiring Internet access. Success will be based on the ability to operate in a disconnected environment as well as the ability to replicate data to and from shore.

Navy Knowledge Online provides a multitude of services to foster and develop Sailors' careers and lives. *"This is a great opportunity for us to partner with NAVSEA and utilize the great work they have already done to create their distance support system,"* said Commander, Naval Personnel Development Command, Rear Adm. Kevin Moran.

To explore NKO tools and opportunities go to www.nko.navy.mil.

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